



How dehumidification curbs the plaguing effect of condensation on the surface

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High humidity levels have always been a matter of concern across industries. Similarly, its impact on the refineries and power plants incurs a huge loss for the companies. Surface preparation and coating in confined area in these sectors is already a complex process and moisture makes the task even more tough to accomplish.

blasted surface is exposed to humid environment conditions prior to painting, it triggers condensation formation on the surface. In such cases, the coating is unable to adhere properly to the surface. In this, surface preparation plays a very essential role in the quality and effective coating and painting of the surface. Proper surface preparation ensures thorough adhesion of the coating to the substrate. In case, painting is done on a condensed surface, it initiates blistering and delamination on the surface.

environmental factors before the coating is applied. In such a case, the coating is unable to properly adhere to the substrate surface post blasting. The entire coating process needs to be repeated all over again. Additionally, condensation is responsible for blistering, blooming, and peeling problems throughout the paint jobs. The inadequate adhesion between the substrate and coating eventually shortens the life of the coating system.

Considering that condensation and corrosion are bound to happen in the presence of RH of more than 45%, it is a prerequisite to control the humidity below 45% for preventing instances of corrosion. To avoid the moisture menace, certain specifications must be fulfilled to ensure quality coating. The temperature of the steel surface to be coated must be maintained at a minimum of 3 C higher than the air dew point. Along with this, a 10 C dew point differential must be maintained between the air inside and outside the tank to be coated. In addition to all these, for effective results, the RH of the surrounding air must not exceed 40%.

The tanks are places where highly vulnerable and critical materials like petrochemical, chemical gases, etc are stored. Here, improper coating damages the surface which is responsible for



Climate control is very critical during blasting, painting and coating jobs in confined spaces. High humidity can highly intervene with the surface preparation and coating processes. Blasting is the very first step to enable painting and coating likewise. But if the

According to industry experts, 60 to 80% of premature coating failure occurs due to inadequate or improper surface preparation. It is the major cause of coating process failure ultimately leading to a phenomenon called flash rust on the surface. Flash rust occurs when the surface is exposed to

contamination and dilutions of products inside. Therefore, it is imperative to control the environmental factors to eliminate the problems arising from high humidity. Installing dehumidifiers plays a crucial role in holding the blast till the coating is done. In case coating is done in the absence of dehumidification solution, then there is no guarantee of coating life. Coating done on cold metal surfaces tends to peel off unless the surface is not cleaned and dried before the coating application. As a result, the blasting and coating operations of the metal surfaces require a combination of conditions with low relative humidity or high surface temperature.

Keeping in mind the complexity of the confined area setting, the dehumidification solution is the simplest and most cost-effective technology that ensures proper surface preparation for coating application. It is highly efficient at eliminating moisture from the coating system. The advanced technology dehumidifies the air inside the tank for the effective accomplishment of blasting and coating processes. It helps in achieving and maintaining the required level of humidity that curtails the prospects of condensation and rust bloom. Dehumidification systems help in meeting the climate conditions of the confined area specified by the contractors for optimum coating performance and timely completion of the job.

The advanced dehumidification solution maintains the RH inside the tank at less than 55% along with a temperature between 30 C to 35 C for all the blasting, painting, and coating processes and controls the environment within the tank even at night to avoid any sort of

condensation. It is adept at maintaining a constant dew point differential of -5 C between the air and the surface to be coated and along with this, it maintains a -12 C dew point difference between the air inside the tank and outside.

Dehumidifiers have a multi-faceted list of advantages. It prevents condensation on the surface, thereby reducing the instances of inter-coat delamination and improving the curing properties. The quality coating with strong inter-coat adhesion abides by the technical specifications suggested by paint manufacturers. Consequently, the coating life is invariably increased by 1.5 to 2 times.



Looking at the adverse effect of moisture on the critical operations inside the tank, during night, monsoon or when the weather outside has high proximity for humidity, the coating process is either postponed or halted. Also, the chances of condensation are high during the night when the weather is cold, giving rise to corrosion and encouraging blooming or flash rust on the surface. Here, dehumidification technology enables the coating process to be carried out throughout the year without worrying about the

ambient weather conditions outside. It can effectively reduce the project time as well as cost by 35%. All the factors together reduce the downtime of the operations and consequently aid in the timely completion of the project. Also, it enables blasting of the entire surface in a single go followed by the complete coating application of the surface. Which in absence of a dehumidification system is done in a phased manner that is neither practical nor economical. It also gets rid of the unnecessary duplication of surface cleaning.

Considering that the processes of blasting, painting, and coating are done inside confined areas which inherently are vulnerable and complex structures, proper arrangements must be made to ensure the safety of the staff working inside. During blasting certain hazardous and inflammable gases are released which increases the temperature within the space. The dehumidification system also includes ventilation solutions that provides fresh air inside confined area to the workers for comfortable working conditions and increase their productivity and safety. In the process, it also eliminates the toxic hazardous and inflammable vapors within the enclosed area which are caused due to welding.

As it is evident that even the slightest presence of moisture can play havoc with the various critical operations inside the confined areas, the importance of dehumidification solutions cannot be overlooked. It ensures operations under controlled environment conditions inside the tanks, bullets, columns, reactors, coke drums, vessels, pipelines, etc. which curtails the inconvenience caused by moisture. □